

## ABSTRACT OF THE DISCLOSURE

[0100] Methods and systems for processing a single sub-channel that includes two or more combined channels. Using intermediate frequency sub-sampling, two or more channels from a broad band signal are combined into a single sub-channel for further analog and digital processing. Each of the two or more channels is down converted to an intermediate frequency, filtered to remove certain undesired channels, and combined such that the two or more channels are adjacent to each other. A digital representation of the sub-channel is produced from the combined intermediate frequency channels. Each channel within the digital representation is down converted to baseband, and the in-phase and quadrature components are separated from each other. Compared to one direct down conversion technique, intermediate frequency sub-sampling as described in the application may reduce the number of analog to digital converters and control amplifiers used in analog processing by a factor of four.

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